



TRANSPORTATION ADVISORY COMMITTEE

7 Twin Circle Drive, Arlington, MA 02474

To: Board of Selectmen, Arlington, Mass

From: Transportation Advisory Committee (TAC)

Subject: School Signage Improvements and Traffic Supervisors

Date: 9 August 2010

Because of the decision to substantially reduce Traffic Supervisor services, maybe completely, the TAC has been asked by both the Board of Selectmen and the Superintendent of Schools to prioritize locations where Traffic Supervisors are most needed based upon objective information. We met with the School Committee on 8/3/10 and delivered a report identifying 15 specific Supervisor shifts that were judged most critical. This report was well received by the School Committee and the Superintendent.

Along with the specific request, the TAC reviewed conditions around the public schools, under the authority of the Board of Selectmen as the Traffic Authority for the Town, where signs and paint could increase pedestrian safety. These recommendations are included on pages 2 through 5 of the attached report to the Board of Selectmen.

This has been an intense task that has had the effort of at least 10 members and associates of the TAC, as well as the school Principals, Safe Routes to School Coordinators, and Traffic Supervisors. We hope many of these can be accomplished very early in the school year, if not at the start.

Respectfully submitted,

Elisabeth Carr-Jones – Working Group Lead

Ed Starr and Jeff Maxtutis – TAC Co-Chairs

Transportation Advisory Committee Members:

Elisabeth Carr-Jones, Jean Clark, Steve Kurland, Officer Corey Rateau, Jeff Maxtutis, Howard Muise, Michael Rademacher, Scott Smith, Edward Starr, Richard Turcotte, and Laura Wiener

Web site; www.arlingtonma.gov/tac

TAC Report to the Arlington Board of Selectmen Regarding Traffic Supervisor Locations

9 August 2010

Executive Summary

For the past several months, the TAC has been working on a set of recommendations to address student safety at the Town's public school Traffic Supervisor locations¹. Faced with the action of removing all the Traffic Supervisors, our approach has been to attempt to determine which locations pose the highest safety risk and to identify any lower-cost opportunities for mitigation. It should be noted that the TAC underwent this work reluctantly. We strongly believe that retaining all the Traffic Supervisors would be the safest situation. Removing any of them clearly poses increased risk to student safety and threatens the progress Arlington has made toward walkable schools.

The Recommendations for the Board of Selectmen & Town Manager appear on page 2. They include standard school signs and other safety measures that could be implemented quickly. The TAC's Overall Recommendations, beginning on page 3, include items which fall under the jurisdiction of the School Committee. In them we recommend the highest risk Traffic Supervisor positions be retained, either in the AM only or in AM and PM shifts. A total of 15 shifts were outlined in our Recommendations for the School Committee. We also recommended that educational outreach efforts be made within the schools to inform and prepare the school community for the changes this coming school year.

The TAC's Overall Recommendations also include several items for further evaluation, including a number of Traffic Supervisor locations being evaluated for a pilot program of crosswalk flags (Appendix A). We expect to vote on these items at our August meeting.

Process

Following a request from the Board of Selectmen, the TAC formed a working group in April led by Elisabeth Carr-Jones to study the Traffic Supervisor locations. The working group held an initial meeting to review available data², determine what further information was needed, assign members to each school, and agree upon a process and timeline for our work.

In May and early June, the working group undertook field studies of the Traffic Supervisor locations and met with stakeholders at the schools (typically, these were the Principal and Safe Routes to Schools Coordinator). During this time, the Police Department also provided crash data for each of the Traffic Supervisor locations over the four-year period from 01/01/06 – 12/31/09 (Appendix D).

Upon completing the field and interview work, the working group held a second meeting in June to synthesize the findings into a set of draft recommendations. A consistent Town-wide approach was used, based on the TAC's work with the schools over the past several years.

The full Transportation Advisory Committee reviewed the working group report at the July meeting and voted the following amended recommendations.

¹ Although Traffic Supervisor locations at private schools are included on the Overall Recommendations (shown in gray), the TAC did not make any recommendations regarding them.

² An initial study was made of the Traffic Supervisor locations in 2006, instigated by the School Committee. This study provided data on traffic volume and crashes, intersection control (signal, stop signs), street width, visibility and number of students crossing at the locations (Appendix C).

Recommendations for the Board of Selectmen & Town Manager Regarding Traffic Supervisor Locations

(please see following pages for overall recommendations)

General Recommendations

1. Refresh painted school crosswalks in the weeks just before school starts
2. Clear snow from critical corners (as defined in 2008) before school reopens after snowstorms
3. Check that walk signals on school routes are functioning in the weeks before school starts

Bishop School Recommendations

4. Ridge St @ Crosby St -- Install School Crosswalk Warning Assemblies (Appendix B)
5. -- Replace missing STOP sign on Crosby at Ridge
6. Ridge St @ Edgehill Rd -- Install School Crosswalk Warning Assemblies (Appendix B)

Brckett School Recommendations

7. Gray St @ Pine Ridge Rd -- Replace standard crosswalk signs with school crosswalk signs
8. Fayette St @ Eastern Ave -- Install DO NOT ENTER 7:45 AM - 8:30 AM Mon - Fri on Fayette
9. -- Install NO PARKING HERE TO CORNER on Eastern at NW corner

Dallin School Recommendations

10. Florence Ave @ George St -- Grind off old crosswalk markings on Florence @ Renfrew St
11. Rhinecliff St @ Dow Ave -- Install School Crosswalk Warning Assemblies (Appendix B)
12. Florence Ave @ Wachusett Ave -- Replace faded STOP signs at both approaches on Florence
13. -- Repair bent pole on STOP AHEAD sign @ #119 Florence

Hardy School Recommendations

14. Herbert Rd @ Chandler St -- Install Crosswalk Warning Assemblies (Appendix B)

Ottoson Middle School Recommendations

15. Acton St @ School -- Install STOP on Acton @ Appleton Place

Stratton School Recommendations

16. Mountain Ave @ Wheeler Ln-- Install School Crosswalk Warning Assemblies (Appendix B)
17. Pheasant Ave @ Fabyan St -- Install School Crosswalk Warning Assembly (Appendix B)

Thompson School Recommendations

18. River St @ University Rd -- Install crosswalk advance warning signs on both River Street approaches
19. N Union St @ Purcell St -- Install School Zone Advance Warning (Appendix B) southbound near Patrick
20. Broadway @ Everett St -- Install School Crosswalk Warning Assemblies (Appendix B)
21. N Union St @ Dunkin Donuts exit -- Request installation of painted stop bar at parking lot exit

Overall TAC Recommendations

Arlington Traffic Supervisor Locations

The TAC has been asked to make recommendations because Arlington is faced with the elimination of Traffic Supervisors at the schools due to a drastic budget shortfall. The recommendations below attempt to balance absolute minimum student safety needs with minimal Traffic Supervisor support.

General Recommendations

- Refresh painted school crosswalks in the weeks just before school starts
- Clear snow from critical corners (as defined in 2008) before school reopens after snowstorms
- Check that walk signals on school routes are functioning in the weeks before school starts
- Distribute Safe Routes to Schools maps for each school district
- Provide pedestrian safety education at the schools (assemblies, etc.)
- Provide clear guidance to schools on what volunteer safety activities are and are not appropriate
- Work with schools to encourage walking school buses³

Bishop School Recommendations

1. Columbia Rd @ Crosby St
Retain Traffic Supervisor AM only
2. Ridge St @ Crosby St
Install School Crosswalk Warning Assemblies (Appendix B)
Evaluate for crosswalk flag set (Appendix A)
Replace missing STOP sign on Crosby at Ridge
3. Mystic St @ Columbia Rd
None
4. Ridge St @ Edgehill Rd
Install School Crosswalk Warning Assemblies (Appendix B)

Brackett School Recommendations

1. Eastern Ave @ School
Retain Traffic Supervisor AM & PM
2. Eastern Ave @ Highland Ave
Evaluate for crosswalk flag set (Appendix A)
3. Gray St @ Pine Ridge Rd
Replace standard crosswalk signs with school crosswalk signs (Appendix B)
Evaluate for crosswalk flag set (Appendix A)
4. Fayette St @ Eastern Ave
Install DO NOT ENTER 7:45 AM – 8:30 AM Mon – Fri on Fayette @ Eastern
Install NO PARKING HERE TO CORNER on Eastern at NW corner

³ A Safe Routes to Schools methodology where a parent leads a group of walking students as if they were on a bus.

Dallin School Recommendations

1. Florence Ave @ George St
Retain Traffic Supervisor AM only
Grind off old crosswalk markings on Florence @ Renfrew St
2. Florence Ave @ Park Ave
None
3. Rhinecliff St @ Dow Ave
Install School Crosswalk Warning Assemblies (Appendix B)
Evaluate for crosswalk flag set (Appendix A)
4. Florence Ave @ Wachusett Ave
Replace faded STOP signs at both approaches on Florence
Repair bent pole on STOP AHEAD sign @ #119 Florence

Hardy School Recommendations

1. Herbert Rd @ Chandler St
Retain Traffic Supervisor AM only
Install Crosswalk Warning Assemblies (Appendix B)
Evaluate STOP AHEAD on Chandler (tree blocks STOP)
2. Lake St @ Brooks Ave
Retain Traffic Supervisor AM only
3. Chandler St @ Brooks Ave
Evaluate STOP sign on Brooks @ Chandler

Ottoson Middle School Recommendations

1. Gray St @ Fountain Rd
Retain Traffic Supervisor AM only
2. Mass Ave @ Appleton St
Retain Traffic Supervisor AM & PM
Evaluate installing strobes on red signals
3. Acton St @ School
Install STOP on Acton @ Appleton Place

Parmenter School Recommendations

Academy St @ Irving St
Traffic Supervisor (privately funded)

Peirce School Recommendations

1. Downing Square
Retain Traffic Supervisor AM & PM
2. Summer St @ Park Ave Extension
None

St. Agnes School Recommendations

1. Chestnut St @ Medford St
Retain Traffic Supervisor (privately funded?)
2. Medford St @ Warren St
None
3. Compton St @ School
None

Stratton School Recommendations

1. Washington St @ Overlook Rd
Retain Traffic Supervisor AM & PM
2. Mountain Ave @ Wheeler Ln
Install School Crosswalk Warning Assemblies (Appendix B)
3. Pheasant Ave @ School
Install School Crosswalk Warning Assembly (Appendix B) on Pheasant at Fabian St
Evaluate installing crosswalks on Overlook Rd at Pheasant Ave

Thompson School Recommendations

1. River St @ University Rd
Retain Traffic Supervisor AM only
Install crosswalk advance warning signs on both River Street approaches
2. N Union St @ Purcell St
Retain Traffic Supervisor AM only
Install School Zone Advance Warning (Appendix B) southbound near Patrick
3. Broadway @ N Union St
None
4. University Rd @ Everett St
Install School Crosswalk Warning Assemblies (Appendix B) on Broadway @ Everett
5. N Union St @ Dunkin Donuts exit
Retain Traffic Supervisor (privately funded)
Request installation of painted stop bar at parking lot exit



Crosswalk Flags and the Adopt-a-Crosswalk Program



Pedestrian and Bicycle
Information Center

Problem

Motorists' inability to see pedestrians crossing at various road and crosswalk types created an unsafe environment for pedestrians.

Background

The Mayor of Salt Lake City in 2000, Rocky Anderson, responded to a national study that declared Salt Lake City as “not pedestrian friendly” by creating a Pedestrian Safety Committee aimed at reducing pedestrian injury accidents. The committee implemented several different safety measures, including crosswalk flags and the Adopt-a-Crosswalk Program.



Flags used in the program.

Solution

Removable orange flags were installed at crosswalks to increase drivers' visibility of pedestrians. The flags increased visibility and showed a clear indication of pedestrians' desire to cross the street. It was shown that both pedestrians and drivers thought there was a benefit of the simple presence of the flags in their holders at the crosswalk. Pedestrians take the flags from one end of the crosswalk to increase their visibility as they cross the street and then return them to the other holder.

Six initial crosswalks were outfitted with flags in August of 2000. By 2007 there were 40 city-maintained downtown flag locations. Due to the lack of available funds and an increased demand of crosswalks with flags, the city began an Adopt-a-Crosswalk program in January 2001. The Adopt-a-Crosswalk program allows individuals or businesses within a one block radius of a marked crosswalk to “adopt” the crosswalk. This program requires that the sponsor monitors the flags and purchases replacement flags when needed. The city installs the flag holders and usage signs, and provides the initial supply of flags at no cost; replacement flags are available for \$0.50 each.



Pedestrians cross the street using flags to increase visibility.

City ordinances were also modified to increase penalties for drivers who fail to yield for disabled pedestrians, pedestrians carrying orange flags, and school crossing guards. For these violations, the drivers were required to appear before the Justice Court Judge and were charged a fine between \$1 and \$750, with a recommended fine of \$425.

Results

As of spring 2007 there were 134 adopted crosswalks; 46 adopted by schools and 88 adopted by residents and businesses. Salt Lake City estimated that the crosswalk flag program costs the city \$30,000 annually. After the initial crosswalk flags were installed observations and interviews revealed that 11 percent of pedestrians were using the flags. Approximately six months later it was estimated that approximately 14 percent of pedestrians were using the flags. The installation of crosswalk flags also created a significant amount of local and national media coverage that increased public awareness about pedestrian safety education. The crosswalk flag program and the Adopt-a-

Crosswalk Flags and the Adopt-a-Crosswalk Program — Salt Lake City, UT

Crosswalk program, along with several other pedestrian safety measures, resulted in a 31 percent decrease in city-wide pedestrian injury crashes, based on 2000 data.

Contact

Dan Bergenthal
Transportation Planner
349 South 200 East, Suite 450
Salt Lake City, Utah 84111
(801) 535-6630

Image Source

ITE Pedestrian Project Award Submittal. Pedestrian Safety Committee.
<http://www.ite.org/awards/pedproject/SaltLakeCity.pdf>



School Area Signs for Arlington Schools



School Crosswalk
Warning Assembly
(MUTCD S1-1)
(MUTCD W16-7p)



School Drop-Off



Additional Plaque
(for use where parking
is otherwise permitted)



School No Parking



Additional Plaque
(for use where parking
is otherwise permitted)



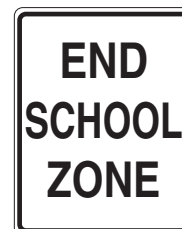
School Speed Limit
Advance Warning
(MUTCD S4-5)



School Speed
Limit Assembly
(MUTCD S4-3)
(MUTCD R2-1)
(MUTCD S4-6)



Substitute Lower Plaque
(MUTCD S4-4)
(for use where flashing
signs are installed)



End School Zone
(MUTCD S5-2)

Safety Scoring Criteria

2006 Traffic Supervisor Study

Please note that the 2006 Traffic Supervisor study did not take all relevant factors into consideration, (such as the number of school children walking alone vs. with an adult and certain morning commuter patterns) so it does not correlate exactly with the recommendations.

The overall safety score of a Traffic Supervisor location (see following page) is the product of the following six factors:

1. Traffic and Crashes

A measure (ranging from 1 to 4) of the traffic volume and speed.

- 1 = Local street with low volume and speeds (typically with peak hour traffic less than 100 vehicles)
- 2 = Collector street or local street with substantial cut-through traffic (typically with peak hour traffic between 100 and 300 vehicles)
- 3 = Collector street with significant rush hour through volume, higher speeds and/or greater width (typically with peak hour traffic between 300 and 1,000 vehicles)
- 4 = Arterial with higher traffic volumes and speeds

This Traffic Volume Score is then adjusted, based on the number of crashes in 5 years:

Traffic Score = $\min(4, \max(\text{Traffic Volume Score}, \text{round}(\text{crashes in 5 years})))$

2. Intersection Control

Is the crossing protected by a stop sign or traffic signal?

Score = 1 for Unprotected, 0.75 for Stop sign, 0.5 for Signal

3. Street Width

Wider streets are more difficult to cross (this replaces the 4-lane factor).

Score = $1 + (\text{StreetWidth} - 30) / 30$

For example: a 30' wide street = 1, a 45' wide street = 1.5, a 66' wide street = 2.2

4. Visibility

Factor based on sight distances between pedestrians and motorists.

Score = 2 if there is a visibility issue, 1 otherwise

5. School Grade Level

Indicator whether the crossing is primarily for elementary school students. Younger children are less able to cross a street safely without assistance.

Score = 1 for Middle or High School, 2 for Elementary School

6. Number of Students Crossing

Factor based on the number of students using the crossing. Note that crossings with larger numbers of pedestrians tend to have lower crash rates per pedestrian (Jacobsen, 2003), therefore this factor does not increase linearly with the number of students.

Score = 5 for 25 students crossing, 10 for 100 students crossing

(In general, this factor is proportional to the square root of the number of students.)

Traffic Supervisor Locations Ranked by Safety Priority
using 2006 Scoring Criteria

	recommended locations
	privately-funded locations

Rank	School	Location	Score	
1	Bishop	Crosby / Columbia	74	
2	St Agnes	Chestnut / Medford	74	
3	Brackett	Eastern @ School	67	
4	Dallin	Florence / George	64	*
5	Peirce	Downing Square	61	
6	Ottoson	Mass / Appleton	60	*
7	Dallin	Florence / Park	58	
8	Thompson	River / University	57	
9	Ottoson	Gray / Fountain	48	
10	Hardy	Brooks / Lake	47	
11	Brackett	Eastern / Fayette	43	
12	Ottoson	Acton @ School	38	
13	Stratton	Washington / Overlook	33	
14	St Agnes	Compton @ School	31	
15	Brackett	Eastern / Highland	28	
16	Bishop	Ridge / Crosby	28	
17	Dallin	Dow / Rhinecliff	27	
18	Hardy	Herbert / Chandler	27	
19	Thompson	N Union / Broadway	26	
20	Thompson	University / Everett	25	
21	Peirce	Park Ave Ext / Summer	25	
22	Bishop	Mystic / Columbia	24	
23	Thompson	N Union / Dunkin Donuts	24	
24	Brackett	Pine Ridge / Gray	22	
25	St Agnes	Medford / Warren	21	
26	Thompson	N Union / Fremont	20	
27	Bishop	Ridge / Edgehill	20	
29	Dallin	Florence / Wachusett	17	
28	Stratton	Mountain / Wheeler	17	*
30	Ecole Bilingue	Academy / Irving	13	
31	Stratton	Pheasant @ School	12	
32	Hardy	Brooks / Chandler	9	

* new location since 2006

			TYPE OF CRASH			
<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>W/Injury</u>	<u>W/O Injury</u>	<u>Cruiser Crash</u>	<u>Hit and Run</u>
<u>Bishop School</u>						
Crosby @ Columbia:	None					
Ridge @ Crosby:	06/22/2006	21:55	✓			
Ridge @ Edgehill:	None					
Mystic @ Columbia:	05/04/2007	08:15		✓		
	11/26/2007	12:46	✓			
	02/08/2008	02:34				✓
<u>Brackett School</u>						
Eastern @ School Entrance:	11/13/2007	16:27		✓		
Gray @ Pine Ridge:	None					
Eastern @ Fayette:	None					
Eastern @ Highland:	07/08/2006	09:41				✓
	07/04/2007	22:52		✓		
	11/28/2007	07:35			✓	
	03/31/2009	16:23		✓		
<u>Dalton School</u>						
Florence @ George:	None					
Dow @ Rhinecliff:	None					
Florence @ Wachusett:	None					

<u>Location</u>	<u>Date</u>	<u>Time</u>	TYPE OF CRASH			
			<u>W/Injury</u>	<u>W/O Injury</u>	<u>Cruiser Crash</u>	<u>Hit and Run</u>
<u>Dallin School (cont'd)</u>						
Park @ Florence:	04/16/2006	15:58		✓		
	07/02/2006	14:49		✓		
	07/17/2007	08:38		✓		
	11/14/2007	11:33		✓		
	03/04/2009	17:03		✓		
	07/03/2009	06:38		✓		
	08/11/2009	12:37	✓			
<u>Hardy School</u>						
Lake @ Brooks:	07/31/2006	17:27		✓		
	08/28/2006	18:22	✓			
	05/30/2008	10:43	✓			
	09/11/2008	09:36				✓
	10/09/2009	17:12		✓		
Herbert @ Chandler:	07/10/2006	08:23		✓		
Brooks @ Chandler:	01/22/2007	08:34		✓		
	01/18/2009	20:43				✓

<u>Location</u>	<u>Date</u>	<u>Time</u>	TYPE OF CRASH			
			<u>W/Injury</u>	<u>W/O Injury</u>	<u>Cruiser Crash</u>	<u>Hit and Run</u>
<u>Otoson Middle School</u>						
Mass @ Appleton Street:	01/26/2006	10:19		✓		
	04/04/2007	17:46		✓		
	05/23/2007	07:46	✓			
	07/13/2007	13:17		✓		
	08/05/2007	19:07	✓			
	08/30/2007	12:57		✓		
	09/25/2007	11:13		✓		
	05/01/2008	16:54		✓		
	11/30/2008	17:21		✓		
	07/03/2009	10:27		✓		
	11/14/2009	19:54		✓		
	12/24/2009	15:15	✓			
Mass @ Appleton Place:	None					
Acton St @ Entrance:	05/16/2007	15:01		✓		
Gray @ Fountain:	01/20/2007	12:47		✓		
	03/10/2007	21:14		✓		
	03/03/2009	16:04		✓		
Gray @ Quincy:	03/21/2006	18:31		✓		

<u>Location</u>	<u>Date</u>	<u>Time</u>	TYPE OF CRASH			
			<u>W/Injury</u>	<u>W/O Injury</u>	<u>Cruiser Crash</u>	<u>Hit and Run</u>
<u>Parmenter School</u>						
Academy @ Irving:	None					
<u>St Agnes School</u>						
Compton @ School:	11/06/2007	13:51		✓		
Chestnut @ Medford:	10/18/2006	11:38		✓		
	07/24/2007	19:07		✓		
	06/13/2008	09:17		✓		
	11/06/2008	20:30		✓		
Medford @ Warren:	02/28/2006	14:32		✓		
	09/11/2006	13:25		✓		
	11/27/2006	18:43		✓		
	08/31/2007	14:47		✓		
	10/09/2007	20:08		✓		
	03/08/2008	19:02				✓
	03/04/2009	14:22				✓
	10/24/2009	18:21		✓		
	12/22/2009	10:25		✓		

<u>Location</u>	<u>Date</u>	<u>Time</u>	TYPE OF CRASH			
			<u>W/Injury</u>	<u>W/O Injury</u>	<u>Cruiser Crash</u>	<u>Hit and Run</u>
<u>Stratton School</u>						
Pheasant @ School:	None					
Washington @ Overlook:	08/25/2006	14:24		✓		
Mountain @ Wheeler:	None					
<u>Thompson School</u>						
University @ Everett:	None					
University @ River:	None					
Broadway @ N. Union:	05/25/2007	08:03		✓		
	03/26/2008	14:10		✓		
	12/23/2008	08:08		✓		
	01/08/2009	17:36				✓
	04/13/2009	17:20	✓			
	05/18/2009	18:55		✓		
	10/24/2009	09:32		✓		
N. Union @ Freemont	02/08/2007	13:27		✓		
N. Union @ Dunkins Exit:	None [*]					

^{*} It should be noted that the lot exit itself does not exist as a location in the CAD System. Multiple methods were used to check the immediate area for possible matches with negative results.

			TYPE OF CRASH			
<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>W/Injury</u>	<u>W/O Injury</u>	<u>Cruiser Crash</u>	<u>Hit and Run</u>
<u>Pierce School</u>						
Summer St @ P.A.E.:	01/30/2006	19:41				✓
	03/16/2006	14:15		✓		
	04/06/2006	15:19				✓
	04/18/2006	18:48		✓		
	08/16/2006	17:14		✓		
	11/06/2006	12:40		✓		
	11/29/2006	12:00		✓		
	02/14/2007	15:35		✓		
	04/12/2007	23:18				✓
	07/16/2007	17:26		✓		
	06/17/2008	08:15	✓			
	01/22/2009	18:38		✓		
	01/23/2009	16:06		✓		
	09/22/2009	12:50	✓			
Downing Square:	04/14/2006	12:46	✓			
	08/03/2006	09:49	✓			
	12/15/2006	15:48		✓		
	01/05/2007	19:08		✓		
	10/16/2007	09:01		✓		
	01/05/2008	10:06		✓		
	02/03/2008	15:51		✓		

			TYPE OF CRASH			
<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>W/Injury</u>	<u>W/O Injury</u>	<u>Cruiser Crash</u>	<u>Hit and Run</u>
Downing Square (Cont'd):	05/04/2008	10:40		✓		
	09/04/2008	07:37		✓		
	11/12/2008	18:42		✓		
	03/11/2009	18:35		✓		